sides 'No. of cylinders' (in decimal) :Interleave value: (in decimal) @FREE Syntax:
Free [devname] Usage : Displays number of free sectors on a device @GFX
Syntax: RUN GF                                        ce package for
BASIC09 to do c                                       2 Syntax: RUN
GFX2([path]<funct                                     r BASIC09 to
handle enhanced                                       Syntax: none
Usage : Graphics                                      handle graphics/
windowing comm                                        e : Give on-line
help to users will                                    st of help topics
@IDENT Syntax:                                        der information
from OS-9 memor                                       memory -s = use
single line output -                                  ins at execution
directory @INIZ Syntax: Iniz <devname><devname> Usage : Attach a device
@INKEY Syntax: RUN INKEY([path],strvar) Usage : BASIC09 subroutine to
input a s                                                          abort to
the proc                                                           nk to a
memory    EDITOR          Gordon Bentzen        (07) 344-3881      ents of
text files                                                         es into
memory    SUB-EDITOR      Bob Devries            (07) 372-7816     a new
directory                                                          memory
module d  TREASURER       Don Berrie            (07) 375-3236      Syntax:
Merge <                                                            output
@MFREE    LIBRARIAN       Jean-Pierre Jacquet   (07) 372-4675      memory
@MODP                                                              dule in
memory    SUPPORT         Brisbane OS9 Users Group                 gs -c =
compare                                                            e = link
to module C off otvle ntvle = change otvle at off(s1) to ntvle V = verify
module M = mask IRQs U = unmask IRQs @MONTYPE Syntax: Montype [opt]
Usage : Set m                                            monitor m =
monochrome m   **Addresses for Correspondence**          age : Creates
and links an OS                                          ROCS Syntax:
Procs [e] Usage  Editorial Material:                    em Opts : e =
display all pro      Gordon Bentzen                     e : Prints the
current data d       8 Odin Street                      s the current
execution direct     SUNNYBANK Qld 4109                 new filename>
Usage : Gives    Subscriptions & Library Requests:      Runb <i-code
module> Usage        Jean-Pierre Jacquet               ntax: Setime
[yy/mm/dd/hh:        27 Hampton Street                   ck @SETPR
Syntax: Setpr <      DURACK Qld 4077                     process to
num @SHELL Syntax: Shell arglist Usage : OS-9 command interpreter
@TMODE Syntax: Tmode [.pathname] [params] Usage : Displays or changes
the op                                                          r /p>
[value]   Volume 4      November 1990      Number 10           link
<modna                                                          ntax:
Wcreate [opt] <wx wy wsx wsy> fgc bgc bdc sty> Usage :
Initialize and create windows Opts : -? = display help -z = read command lines
from stdin -s=type = set screen type for a window on a new screen @XMODE

---

---

It is about that time of year again when we begin to compile the Christmas wish list just to leave lying about in the most conspicuous spots. In this edition we include a discussion downloaded from "Bitnet" on the subject of the MM-1, so if a new MM-1 is on your wish list the comments posted by John Tynes may be of interest to you.

Both versions of the new OS9 machine continue to attract comment and criticism from some message authors. Some recent "discussions" have been along the lines of knocking both the new machines because they do not support a math co-processor, and further point out just what capabilities they do not have. It seems to us that two entirely different philosophies are involved here.

(1) MS-DOS people seem to adopt the approach of "if the task at hand is difficult or improved performance is required, then throw in more hardware capability", i.e. more memory, faster processors, add co-processors or whatever it takes.

(2) OS9'ers on the other hand, and in particular CoCo OS9'ers, approach a problem on the basis that anything is possible if we persist long enough. And who could argue the brilliance of many OS9, OSK programmers.

Ponder for a moment, an MS-DOS PC running a processor at less than 2 meg and with less than 640k of RAM?

ALSO IN THIS EDITION :-

OS9 Tutorial Part 2 by Bob Montowski (edited by Bob Devries).

Selecting a programming language. - This article is a very interesting analogy by David Solomon & David RosenBlueth which may or may not be helpful.

P.D. Library of the National OS9 Usergroup. This edition includes a directory list of 10 disks containing .ar archives, and a couple of samples of the files from each archive. Now we realise that the archive names really do not give

much information about the types of programmes or files included. There has been a good deal of discussion amongst the "Newsletter team" on the best method of providing useful information about what we have available in the P.D. library, which has resulted in a plan.

The plan:- We have developed a database under OS9 Profile which will provide details of each archive including the type of programme, name, size, number of files, size and a brief description of the archive. The data loading, however, is not yet completed.

Bob Devries has undertaken the task of modifying his "Database in C" to allow us to distribute the data files and his programme. This will then allow each user to search the database files on a number of parameters for the purpose of selecting individual archives. The selected archives may simply be ordered by name and forwarded to you on disk. We hope that each member will end up with P.D. programmes which are suitable to his/her particular interests.

When ?? we are planning on this being available by Christmas.

In the meantime, please feel free to order individual "archives" from the directory listings if you do not mind a bit of pot luck. The "AR" utility will be needed to extract files, so please advise if you do NOT have it. "AR" is from the PD library and can be provided in an un-archived format with its DOC file.

The usual rules will apply, that is, send formatted disks to our librarian - Jean-Pierre Jacquet - plus $2.00 copy fee for each formatted disk and return postage. (Jean-Pierre's address is on our front cover.) Please make cheques payable to "National OS9 Usergroup".

We will also accept requests for our "Archive Database" on the same basis if you care to pre-order. The complete archive database should fit on a single 35 track single sided disk. These requests will be fulfilled as soon as this database is completed.

                                        Cheers, Gordon.

Which Computer?
A message from the InterNet message system.

One User Speaks

This is meant to be a short essay by a non-programmer about why I plan to buy an MM/1. Towards the end will be several suggestions and concerns that, at this late date, I hope have been implemented. No technichal stuff here!

My current system is a 512k CoCo 3 with two single-sided 40trk drives I've had for years (remember J&M?). I use it primarily for word processing, communications, and games. It is well-suited to the task. I've used CoCo's since I was in the sixth grade, I think... (am now a sophomore at U of Missouri) and have sworn by them. From the silver battleship to a TDP-100 to the 3, I have learned a great deal about operating computers, though basic09 was about as far as I ever went, due to the problems I had with OS-9.

All this time, there was something "better". TI-994a's, Apple II's, Commodores... I always felt that I had the "underdog" of computers. But I never looked back.

Twice in my "computer career" I've experienced moments of true frission, where I was really excited to be a part of the "CoCo Community". First, I remember clearly when I turned a page in an issue of Rainbow and saw the first full page ads for CoCo Max. Those early screen shots blew me away... I had used a Macintosh a few times, and found them annoying, but even so I never imagined that the CoCo was capable of similar performance. I count CoCo Max as a real breakthrough product.

The second part was a friday night last spring, the first night of the Chicago Rainbowfest. I was still in Missouri, as I had arranged to fly in the next morning for the fest. I had seen those odd ads in Rainbow about a new computer, and had asked for info. That first mailing from KLE arrived that friday, and I read it that night.

I went nuts. It sounded like everything I had wanted for a long time. I had previously planned to get a Disto SC-II, a 4-in-1, and at least one 3.5" floppy that weekend at the fest. Those plans were scrapped as soon as I read the mailing.

I had heard next to nothing about the computer at that point... I think I joined this list a few days after the fest, and so had no advance word. At the fest KLE demo'd the MM/1, and the Tomcat demo'd itself right out of my budget.

But, I've got a nice CoCo3 setup already. Why an MM/1? I want to use the MM/1 as a personal home computer. Word processing, communications, games... like I said. I am not a software developer, just a user, though I have kept up with OS-9 out of interest and understanding just how powerful it was. Why buy a new computer? I had been thinking about buying an Amiga... I like to fool around with graphics & sound, and it looked great. But I really couldn't justify the expense. The MM/1 was reasonable, had the graphics and sound I wanted, and most importantly it stayed "in the family" of the CoCo's I have used for years. I was impressed by the people designing it, and intrigued that it was even possible for a bunch of third-party developers to get together and build an affordable "dream machine". People put money toward causes they support. The local animal shelter, greenpeace, politicians, etc. While I don't think Paul Ward sees IMS as a charity, the principles and ideals behind it make it something I want to support. The genuine balls of these people to try something like this is amazing.

Some concerns:

‡ The MMA (both machines) must have superb documentation, unlike Tandy's OS-9 books. I intend to use the computer straight out of the box. If it is as difficult to set up as, say, Multi-Vue was, I will be disapointed and a lot of new users will be turned off in droves. Documentation is one of the most fundamental parts of any system, and if it is cursory and cheap you're not going to make your mainstream users happy. I hope both developers will find somebody who knows little about any computer and beta-test the system with them, from opening the box on.

‡ Full support and updates are a must. Tandy dropped the ball on this one. At the same time, though, there will be a lot of users who aren't on CompuServe, Delphi, etc. and so will not see postings there about such things. Your relationship with the user should not end with the sale... newsletters, updates, etc. are great in this regard. Rainbow filled this function admirably for years when RadShack didn't. Don't lock anyone out because they don't have a modem.

x Impressive Stuff is always great. I intend to show off my new computer. Hopefully there will be some neat-o kinda things bundled with these systems to make prosetylizing easy. One of my friends, a confirmed Mac freak, was really impressed with the initial KLE mailing, and very taken with the genesis of the project (as a third-party sort of thing). I hope to knock his socks off when I see him again, MM/1 in hand.

x Hardware compatability. I'd like to hook up at least one of my old 40trk slimlines to the MM/1 just to get use out of it, though the 3.5 will make it look sad by comparison. But, storage is storage. In addition, I have joystick, two-button mouse, and some odd peripherals (Wico Trackball!) that I'd hate to just dump. I bought a new monitor in anticipation of the MM/1... it is the new Magnavox with stereo speakers & jacks... hopefully the MM/1 expansion board allows stereo output, as I am not sure. The easier this stuff is to connect, the better.

x Useful software bundled. I hope to learn more about this from the Insider, if it ever arrives ;-). Also, of course, new software releases. One consideration is where these products will be advertised. Should a major company from the MS-DOS field have something, would they advertise in Rainbow? Hopefully not. If we can get advertising going in mainstream computer mags we'll do a lot for the end user. Should they have to buy a magazine such as Rainbow just for KMA stuff, when most of the mag will be useless to them? I suggest KLE distribute its customer mailing list to all developers, so that the users can be certain of hearing new stuff. Ads in mainstream mags are a must... until OSK'er or whatever becomes one!

I think that's about it. I am extremely excited about the prospects for the new computers... if only I can get that money together! Erk.

John Tynes

ooooooooooo0000000000oooooooooo

## OS9 Tutorial
### by Bob Montowski
### edited by Bob Devries
### Part Two

EDITOR'S NOTE:

This tutorial was written some time ago, and is aimed at OS9 level one users. The main gist of the article is, however, still relevant for OS9 level two.

OK, glad to see that you are back for lesson #2. I'll cover the way the OS-9 has multiple directories and how each directory can have directories within that. What is this good for and how can you use this on your OS-9 system? Well, first it makes it very easy to put your files on your disks in a manner that will make it easy for you to find those files again in the future... Let's take a blank disk and format it. If you have one drive do this:
OS9:load format dir makdir build free

Take your Master Disk out of drive /d0 and put in a blank disk. Now at the OS9 prompt you type format /d0. You will be asked if you really want to format the disk in drive /d0 ? Type Y for yes. When the format is done you will be asked for a name to put on the disk. Each disk you format under OS-9 will have a NAME on the disk. For the time being we'll call this disk JUNK DISK. OS-9 will check the disk to be sure

all the sectors are good and if not OS-9 will lock out the bad sectors from the directory. This means that you could use a scratched disk that you were not able to format under RS Dos. [ED: I do not reccomd this at all] But you should beware of doing this if you intend to put anything reallllllly important on this disk. Now that the format is done at the OS-9 prompt, type:

OS9:free /d0

This will check the disk you just did the format on in drive 0 and it will tell you the name of the disk, how many total sectors there are on the disk and how many of those sectors are available for you to store data in. OS-9 is set up for a 35 track system with 18 sectors per track. This gives you 630 sectors total on the disk and OS-9 will take 10 of those sectors for its Directory information. If you do not see 620 sectors free for use than the disk had some bad

sectors on it and you might not want to put
anything important on this disk. [ED: This is
only true for level one, and level two as
supplied] But for now we will just experiment
with the disk. at the OS9 prompt type:

```
OS9:makdir /d0/LETTERS
OS9:makdir /d0/BILLS
OS9:makdir /d0/LETTERS/FROM.JOE
OS9:makdir /d0/LETTERS/FROM.SUE
OS9:makdir /d0/LETTERS/FROM.TOM
OS9:makdir /d0/BILLS/PHONE
OS9:makdir /d0/BILLS/GAS
OS9:makdir /d0/BILLS/FOOD
OS9:chd /d0
OS9:dir /d0
```

You will see that the dir returns LETTERS
BILLS as what is on the disk in drive /d0 But you
made 6 directories, so where are the other ones?

Try this:

```
OS9:dir /d0/BILLS
```

```
PHONE      GAS      FOOD
```

is what you will get. See how you can
cluster important stuff in directories so that it
has a logical flow and you can work your way down
through the levels of the directories to get the
info you want????

Try this:

```
OS9:dir /d0/LETTERS
```

```
FROM.JOE   FROM.SUE   FROM.TOM
```

is what you get.

In a real life situation, say the business
world you could then do this:

```
OS9:dir   /d0/LETTERS/FROM.TOM
```

and you would see the letters you stored from
someone called TOM. A very neat, logical way to
store and retrieve data from your disk. When you
get into owning double sided disks for storage or
even a Hard Disk drive for storage you will see
how this makes it easier to get to your
information. Imagine having a Hard Disk under RS
DOS? A Dir of that drive might return a
directory listing some 100-500 lines long. It
would be a real pain to read all those titles and
try to find the file you wanted to del or copy or
rename.

If you had a two drive OS-9 system than you
can go through this exercise too by just putting
the disk you wish to format in drive /d1 and
changing all the makedir and dir statements I
gave so they say /d1 instead of /d0.

Now in the prior example I showed you the
command chd, what is this? Well OS-9 has two
commands built into it and you can call them to
tell OS-9 that you are changing your DATA
directory or your EXECUTION directory. Now this
is very important to remember!!! If you take the
Master Disk out of drive /d0 and put in a new
Master Disk that say has more commands in its
/D0/CMDS directory you must tell OS-9 that you
did this.

You do this by:

```
OS9:chx /d0/cmds
OS9:chd /d0
```

OS-9 will then check this disk so it will
know where the DATA directory is on the disk and
where the EXECUTION directory is on the disk. It
will NOT always be in the same spot on each disk.
You might be used to RS DOS where the directory
was ALWAYS on track 17, but this is not true
under OS-9. OS-9 must always know where these
two directories are before it will do a
read/write for that disk. Another benefit of the
chd and chx command are to save you some typing.
So if you are not a quick or accurate typist
these commands are a real boon to you. Take the
example above where we had directories within
directories. If you wished to copy files or
delete files or build files in the
/d0/letters/from.joe directory you would think
you would have to type that long line each time.
You could for your own peace of mind but there is
a shortcut to all that typing.

Do this:

```
OS9:chd /d0/letters/from.joe
```

If you do a dir now you will see that there
are NO files in the directory you are in. You
could build a file in this new DATA directory by
typing

```
OS9:build /d0/letters/from.joe/june.1st
```

or you could just say:

OS9:build june.lst

As you used the chd command earlier, OS-9 knows to add that whole string of characters in front of june.lst to make the whole pathlist to where you wish to build a file. You see that there is less chance of a typing error in this shorthand method rather than typing out that long string of characters each time.

When you go to makdir or build something on the disk you have to keep in mind that OS-9 expects titles of directories and files to obey certain rules. The names of these files/directories MUST begin with a letter (upper/lower case) and may have no spaces in the title. If you wanted to build a file called: a letter from my buddy, you would need to type it in as: a.letter.from.my.buddy for OS-9 to accept it. You could have even typed it in as: aletterfrommybuddy But this is a bit harder to read. Another character you can use to separate words for easier reading is the underscore sign. This can be made by typing the control and minus sign together. Depending on the type screen you are reading OS-9 on you will see a left arrow or an underline. They are both the same ascii character, but the character rom on the CoCo was setup for the left arrow sign. This control minus key is a bit hard to remember and harder yet to type so I use the period(.) to separate my words in my titles and directories. File names and directories can be up to 29 chrs. long. You can have numbers mixed into this but the first chrs. of each file/directory MUST be a letter!

so these names are perfectly legal:

number11111111
jan281985
q1234567890
a2ggggg8888ccccc9999

NO SPECIAL CHRS. MAY BE USED IN A FILE NAME OR A DIRECTORY NAME!!!

This means no !@#$%^&*+="'- are allowed in any title. Some of these chrs. are used by OS-9 to perform other useful functions that will be covered in a future lesson.

OS-9 has the ability to take information and pass it thru a pipe into a filter to change the info in some manner before showing it on your screen or your printer. The command for a pipe is the exclamation point(!). A filter can be thought of as a program that will take data in

and do something with it before passing some data out. The ONLY filter that you have with your original OS-9 is the filter called TEE.

If you were to do this:

OS9:list startup ! tee /d0/f1 /d0/f2

it would list the data in the file called startup thru the pipe (!) into the filter TEE. This program would then send the data out to two files that are called /d0/f1 /d0/f2 and you would have two perfect copies of the file startup called f1 and f2.

You could have done this same thing by typing:

OS9:copy /d0/startup /d0/f1
OS9:copy /d0/startup /d0/f2

TEE will take any data that is piped into it and send it to the list of devices or files that are printed after the tee command and separated by spaces.

so a line like this:

OS9:dir /d0 ! TEE /d0/stuff /p /d0/s2

will send a directory of /d0 to your screen, a file called /d0/stuff, to the printer, and to a file called /d0/s2. This is a way to get some data to a lot of different places all at about the same time. There are other filters you can buy that will do the following:

OS9:list startup ! upper

this will take any data in a file called startup and send it through the filter called upper. Upper will take ALL lower case letters and change them to upper case before passing that info on.

OS9:list startup ! wc

This command will list the file startup through the pipe into the filter wc which will count the # of line, chrs, and words in the file which wc will then printed out to your screen. Imagine doing that by hand? There are a LOT OF FILTERS that you can buy. Check the Official OS-9 Tour Guide out for a list of the filters you can buy and who sells them.

A piece of advice now.

If you think you are going to get into OS-9 you should consider getting a 2nd disk drive if you now only have 1 drive.

OS-9 can be run on a single drive CoCo but it is a real PAIN IN THE BUTT!!! On a 2 drive system you can keep all your commands on drive /d0 and all your data on drive /d1 and should speed along just fine and not worry about space being tight on your drives when you go to build files in the future. [ED: On level two, you cannot reconfigure OS9 to use double-sided disks if you only have one drive]

Until you become familiar with OS-9 and the way it gives error #'s instead of letter codes for the errors you make then do this; OS9:printerr this will then print the error # of any error you have and give you a short english(???) sentence of what was wrong. [ED: this is available in level two also, but is a patch from the level one version. See the Usergroup Library] As you use OS-9 more you will find that you will likely get 4-6 error codes that tend to repeat a lot. Most errors on OS-9 are caused by typing errors when entering directory names or file names.

I hope I don't appear to be jumping about two much with these lessons but I am trying to tackle the problems of OS-9 in the same manner that I ran into them and am sure other new users are finding them. So I give this final bit of advice.

OS-9 (level one) comes with 3 books. a red (purple) one, a blue one and a yellow (orange) one. Don't even look at the blue book yet. It has m/l info in it that you MAY NEVER use unless you get into m/l programming under OS-9. The red book will tell you all the commands available under OS-9 and a bit on how they work. [ED: of course, all books are joined in one in level two]

READ THIS BOOK OVER AND OVER AT LEAST 4 TIMES!!!
[ED: OS9 Commands section]

The yellow book has info on the text editor that comes with OS-9. This is covered in the 1st half of the book.

READ THIS VERRRRRY CLOSELY...IT GETS COMPLICATED

but there are a lot of examples.

The 2nd half of the yellow manual also has some m/l info in it for doing assembly of m/l programs.

If you are not going to get into m/l ever than you don't need to read this info. Even though you have these 3 fine manuals, run to the nearest RS store and buy the Official OS-9 Tour Guide. It has more info than these 3 manuals and it is written in a lot friendlier manner than these 3 manuals. It also gives better examples on how to use the commands available to you under OS-9 and gives a history of OS-9 and why it is such a fine Operating System to run on your CoCo. [ED: also useful for level two is 'The Complete Rainbow Guide to OS9 Level II']

Next lesson?

I will tell you the commands that you might neve use and how to delete them to make more space on your Master Disk.

Bob Montowski    215-277-6951

ooooooooooOOOOOOOOOOooooooooooo

## COMPUTER LANGUAGES

This is in regards to the "ideal" languages question.

Selecting a Programming Language
David Salomon & David RosenBlueth

With such a large selection of programming languages it can be difficult to choose one for a particular project. Reading the manuals to evaluate the languages is a time-consuming process. on the other hand, most people already have a fairly good idea of how various automobiles compare. So in order to assist those trying to choose a language, we have prepared a chart that matches programming languages with comparable automobiles.

Assembler       A formula-1 racecar. Very Fast, but difficult to drive and expensive to maintain.
Fortran II      A model T Ford. Once it was king of the road.
Fortran IV      A model A Ford.
Fortran 77      A six-cylinder Ford Fairlane with standard transmission and no seat belts.
COBOL           A delivery van. Its bulky and ugly, but it does the work.
BASIC           A second-hand rambler with a rebuilt  engine and patched upholstery. Your dad bought it
                for you to learn to drive. You'll ditch the car as soon as you can afford a new one.
PL/I            A Caddilac convertible with automatic  transmission,  a two tone paint job, white-wall
                tyres, chrome exhaust pipes, and fuzzy dice hanging in the windshield.
C               A Black firebird, the all-macho car. Comes with optional seat belts (lint) and optional
                fuzz-buster (escape to assembler).
Algol 60        An Austin mini. Boy, that's a small car!
Pascal          A Volkwagen beetle. It's small but sturdy. Was once popular with intellectuals.
Modula II       A Volkswagen rabbit with a trailer hitch.
Algol 68        An Aston Martin. An impressive car, but not anyone can drive it.
LISP            An electric car. It's simple but slow. Seat belts are not available.
Prolog/Lucid    Prototype concept-cars.
Maple/MACSYMA   All terrain vehicles
Forth           A go cart
Logo            A kiddie replica of a Rolls-Royce. Comes with real engine and a working horn.
APL             A double-decker  bus.  It takes rows and columns of passengers to the same place all at
                the same time. But, it drives only in reverse gear and is instrumented in Greek.
Ada             An army-green Mercedes-Benz staff car. Power steering, power brakes, and automatic
                transmission are all standard. No other colors or options are available. If  it's good
                enough for generals  it's good enough for you. Manufacturing delays due to difficulties
                reading the design specifications are starting to clear up.

```
+------------------------------------------------------------------------+
:  Dennis M. Weldy (OS9er)   :  Bitnet Weldy@AUDUCVAX  : Delphi   OS9er  :
:     "Born to write C"      :  Compuserve 74270, 1030 : Bix      OS9er  :
:------------------------------------------------------------------------:
: CoCo OS9 is a powerful operating system hampered by the hardware.      :
: PC compatibles are powerful machines hampered by the operating system. :
+------------------------------------------------------------------------+
```

ooooooooooOOOOOOOOOOooooooooooo

Directory of Disk 1  EUROPEAN OS9 USERGROUP P.D. DISKS

| | | | | |
|---|---|---|---|---|
| access.ar | aciafix.ar | alib.ar | altstart.ar | ansi.ar |
| ansi_demo.ar | ansishow.ar | arc.ar | archiveutl.ar | area.ar |
| ascii.ar | asciisort.ar | austral.scp.ar | average_stdev.ar | |
| bawk.ar | bbclock1.ar | bbterm2.ar | bee.ar | beta3.ar |
| bitbang.ar | blob.ar | blocks.ar | bootlink.ar | bounce.ar |
| bounce_c.ar | bplus.ar | btlink.ar | bugs2.ar | byte.ar |
| calc.ar | calc3.ar | calendar.ar | call.ar | carmen.ar |
| carrier.ar | cartog.ar | catlog.ar | cattr.ar | cb.ar |
| cc.1.ar | cc.2.ar | cc2.ar | cc2fix.ar | |

Directory of Disk 2

| | | | | |
|---|---|---|---|---|
| cc2new.ar | cc3disk.ar | cc3go.ar | cc3gol.ar | cdir.ar |
| cgfx_2.ar | cgfx_2src.ar | cgfxl_fix.ar | cgrab.ar | changee.ar |
| checkbook.ar | checks.ar | chomp.ar | choose.ar | christms.ar |
| chwt.ar | classcor.ar | clib.ar | clibdo.ar | clibdoc.ar |
| clibl.ar | clibt.ar | clk.ar | clkl.ar | cls.ar |
| cm3.ar | cmdcard.ar | cmouse.ar | cobbs09.ar | cocobin_strp.ar |
| cocothello.ar | colored.ar | convert_pcdos.ar | | copy.ar |
| copyl.ar | copyosk.ar | copypatch.ar | costrip.ar | cpatch.ar |

```
cpprint.ar      crc.ar          cron.ar         cs.ar           csrcl.ar
csrc2.ar        cstart.ar       cstdlib.ar      ctrlrgb.ar      cubist.ar
cursive.ar      cursor.ar       cuts.ar         cutssrc.ar      dasm.ar
datamod.ar
```

### Directory of Disk 3
```
dbf.ar          dcpatch.ar      ded.ar          ded3.ar         des.ar
diff.ar         digivull.ar     dirosk.ar       dis.ar          disasm_v1.5.ar
dlist.ar        dmode3.ar       dmpcodes.ar     door.ar         drivers.ar
dskopt.ar       dutil2.ar       dxtype.ar       easy.ar         eco.ar
edl6.ar         edcon.ar        edcon_v2.0.ar   edfont.ar       eliza.ar
encoder.ar      envelope.ar     eprom.ar        exec4.ar        f1040.2.ar
f1040.ar        filedata.ar     filedi.ar       filer.ar        finance.ar
fixar.ar        flink.ar        forksh.ar       formatter.ar    forth09.ar
fpx.ar          fracta.ar       frame.ar        fsedit.ar       fstgrf.ar
gencopy.ar      gfrmat.ar
```

### Directory of Disk 4
```
foruml.ar       gif2vef.ar      glife.ar        grfdrv25.ar     gshel2.ar
gshell.ar       gshpat.ar       hackers_kit_1.ar                hdc.ar
hdkit.ar        hdmake.ar       hdtool.ar       header.ar       helpmsg.ar
helv.ar         hgraph.ar       icons.ar        info.ar         inkey.ar
install.ar      install2.ar     instalv2.ar     insuiter.ar     ipatch.ar
jtfm.ar         kdutil.ar
```

### Directory of Disk 5
```
kbcom.ar        kdutils.ar      kermit_1.5.ar   kermit_2.0.ar   kermit_c.ar
keyboard.ar     kraut.ar        label2.ar       landscape.ar    larrymv.ar
lf.ar           lister.ar       lmerge.ar       login.ar        logout.ar
ls.ar           lyra3.ar        lzw.ar          makdir.ar       mapgpb.ar
maze.ar         megaread.ar     memmap2.ar      menul.ar        menu_stuff.ar
mergepix.ar     microlink.ar
```

### Directory of Disk 6
```
misc.ar         mixsrc.ar       mixup.ar        modasm.ar       moddoc.ar
modutil.ar      more2.ar        morse.ar        mouse.ar        move.ar
mroff2.ar       musev3.ar       mv2pat.ar       mvdemo.ar       mvskel.ar
mvtest.ar       mybbs.ar        nbs.ar          nbs303.ar       newfile.ar
noluck.ar       nutsb09.ar      o9gif.ar        orb.ar          os9c.ar
os9mpg.ar       os9p3.ar        os9p4.ar        os9tips.ar
```

### Directory of Disk 7
```
os9util.ar      osinfo.ar       ostart.ar       osterm208.ar    ostrm142.ar
ostrm207.ar     pager.ar        pak.ar          parallel.ar     pascal.ar
pascal2c.ar     patch_misc.ar   patches.ar      pcdos.ar        pdcom.ar
pdlib.ar        period.ar       pfv2.ar         phbase.ar       picwin09.ar
pix_misc.ar     pixformat.ar    play.ar         play4.ar        playcomp.ar
playmus.ar      playutil.ar     playv3.ar       poker.ar        popscore.ar
ppc.ar          print.ar        printer.ar      purge.ar        qtime.ar
qtip2.ar        qtip20.ar
```

### Directory of Disk 8
```
r3demo.ar       random.ar       rat.ar          reback.ar       reboot.ar
rel.ar          relay.ar        remove.ar       rewrite.ar      rleshow.ar
rma.alib.ar     rmcr.ar         rs232c.ar       rsdos.ar        rsread2.0.ar
rssave.ar       scfed2.ar       scpatch.ar      scramble.ar     screen_stuff.ar
script.ar       scrnbin.ar      scrnsrc.ar      sdir2.ar        select16.ar
```

| | | | | |
|---|---|---|---|---|
| serial.ar | setcolor.ar | shar.ar | shell21.ar | shellmate.ar |
| show.ar | simon.ar | sled23.ar | smartwatch.ar | smenu.ar |
| softkeys.ar | softrock.ar | sokfont.ar | sokoban.ar | solitair.ar |
| solsrc.ar | | | | |

### Directory of Disk 9

| | | | | |
|---|---|---|---|---|
| spanner.ar | spell.ar | spew.ar | sprint.ar | sq.ar |
| sscrip.ar | sspak.ar | ssplit.ar | st.ar | starlanes.ar |
| strings.ar | strip.ar | sum.ar | sun.ar | super.ar |
| tap.ar | tdump.ar | tetris.ar | tflicons.ar | tower.ar |
| towers.ar | transfer.ar | trek.ar | tsedit.ar | tsedpat.ar |
| tsgomon.ar | type.ar | ubox3.ar | ubox3_450b.ar | uldir.ar |
| ultisongs.ar | umeformat.ar | umusic.ar | umusmv.ar | untc.ar |
| unzip2.ar | uptime.ar | ustats4.ar | utlraacia.ar | uucode.ar |

### Directory of Disk 10

| | | | | |
|---|---|---|---|---|
| v20upl.ar | vdd.ar | vef105v2.ar | vef2gif.ar | view.ar |
| view2.ar | viewgif.ar | virus.ar | wait.ar | watrfall.ar |
| wdir.ar | wfnc.ar | wheres.ar | wild.ar | windowload.ar |
| windows.ar | winvdg.ar | wizdoc.ar | wizicons.ar | wizprl.ar |
| wizpr2.ar | wizpr3.ar | wizpr4.ar | wlabel_color.ar | wmaker.ar |
| wmode.ar | wmode77.ar | wrap.ar | wtype.ar | x10arl.ar |
| xc.ar | xdial.ar | xeq5.ar | xm.ar | xmac.ar |
| xym.ar | yahtzee.ar | yatzee.ar | zap.ar | zmodem.ar |

Listed below are examples of "archive" content.

ARCHIVE ultisongs.ar

| file name | ver | file date | file size | stored size |
|---|---|---|---|---|
| dixieland.ume | 0 | 89/09/03 22:44 | 16896 | 8791 |
| goldrush.ume | 0 | 89/09/03 22:46 | 11136 | 6144 |
| heartofgold.ume | 0 | 89/09/03 22:48 | 9600 | 4942 |
| limit.ume | 0 | 89/09/03 22:51 | 7680 | 4158 |
| noname.ume | 0 | 89/09/03 22:36 | 16896 | 9334 |
| readme | 0 | 89/09/04 19:55 | 376 | 274 |
| sundown.ume | 0 | 89/09/03 22:50 | 10752 | 5734 |
| time.ume | 0 | 89/09/03 22:41 | 14592 | 8235 |
| ultibox | 0 | 89/08/28 23:44 | 13696 | 13696 |
| wildfire.ume | 0 | 89/09/03 22:33 | 17536 | 10404 |

ARCHIVE wizprl.ar

| file name | ver | file date | file size | stored size |
|---|---|---|---|---|
| wizpro | 0 | 88/10/03 15:20 | 8132 | 8132 |
| wizconfig | 0 | 88/11/10 01:13 | 12452 | 12452 |
| wizquit | 0 | 88/09/30 18:24 | 4435 | 4435 |
| wizinfo | 0 | 88/09/30 09:18 | 2095 | 2095 |
| newhost | 0 | 88/09/30 18:19 | 4873 | 4873 |

oooooooooo0000000000oooooooooo